



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,278	03/01/2005	Christian Block	14219-079US1 P2002,0828 U	6665
26161	7590	12/29/2005	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			BAUER, SCOTT ALLEN	
			ART UNIT	PAPER NUMBER
			2836	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/526,278

Applicant(s)

BLOCK ET AL.

Examiner

Scott Bauer

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 22-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 03/01/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

2. Claim 36 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Claim 36 should be changed to depend from "claims 33 to 36" to depend from --claims 33, 34, or 35--.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 22-24, 26-29, 31, 32 & 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim (WO 00/57515) in view of Siemens AG (DE 3626800).

5. With regard to Claim 22, Kodim, in Figure 1b teaches circuitry comprising: a terminal (11) for use with a high-frequency signal; at least two signal lines (Port 2 & Port 3); a diplexer (3), which is a switching unit for connecting the terminal to a signal line; and a primary protection device (1) for protecting against electrostatic discharges (page 1 lines 3-5), the primary protection device (1) being between the terminal (11) and the switching unit (3), and that the primary protection device comprises a first element (L1) that diverts voltages.

Kodim does not teach that the primary protection device diverts a voltage greater than 200 V to a reference potential.

Siemens AG, in Figure 1, teaches a surge protection device used in an HF system to protect a device against over voltage surges. The protection device comprises a primary protection device (2) comprising a first element (6) that diverts voltages having a pulse height greater than 300 V (column 3 lines 31-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim with Siemens AG, by replacing the protection circuit (1) taught by Kodim with the protection circuit taught by Siemens AG, for the purpose of providing an improved over-voltage protection which contains a coarse and fine protection element in order to clamp the input voltage at a more accurate value.

Kodim in view of Siemens AG discloses the claimed invention except that the first element diverts voltages having a pulse height greater than 300 V to a reference

Art Unit: 2836

potential, instead of 200 V. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the fine protection device to trigger at 200 V instead of 300V, since it has been held that discovering an optimal value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

6. With regard to Claims 23 & 24, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Siemens AG further discloses that the first element has an insertion attenuation that is less than .1 dB, which is less than .3 dB and that the first element has a capacitance that is less than 1 pF (column 3 lines 31-40).

7. With regard to Claim 26, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Siemens further discloses that the primary protection device comprises a circuit path (3) that connects the terminal and the switching unit; and wherein the first element (6) connects the circuit path to the reference potential.

8. With regard to Claim 27, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Siemens AG further discloses a second element (4) that is in parallel with the first element, the second element for limiting a current load of the first element.

9. With regard to Claim 28, Kodim in view of Siemens discloses the circuitry of Claim 2. Siemens AG further discloses a capacitor (5) on a circuit path between the first element (6) and the second element (4).

10. With regard to Claims 29 & 31, Kodim in view of Siemens discloses the circuitry of Claim 27. Siemens further discloses that the second element comprises is a discharger which would inherently have a capacitance of less than 1 pF.

11. With regard to Claim 32, Kodim in view of Siemens discloses the circuitry of Claim 27. Kodim further discloses that a coil (L1) can be used for a first element of a surge protection shunt device with an optimum value of 15 nH.

Kodim in view of Siemens AG does not disclose specifically that the inductor (L1) is used as the second protective element.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the coil taught by Kodim for the second surge protection element taught by Siemens AG for the purpose of providing a shunting device that is smaller and requires less maintenance than a gas discharge gap.

Kodim in view of Siemens further does not disclose that the coil has a value of 18 nH. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a 18 nH inductor instead of a 15 nH inductor as the second element, since it has been held that discovering an optimal value of a result

effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

12. With regard to Claim 41, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Kodim further discloses that a switching unit comprises a gallium arsenide switch (page 6 lines 15-17).

13. With regard to Claim 42, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Kodim further discloses that the terminal (2) comprises an antenna input of a mobile telephone (page 1 lines 1 & 2).

14. With regard to Claim 43, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Kodim further discloses that the signal lines comprise transmitting and receiving paths of a mobile telephone (Page 4 lines 23-31 and Page 5 lines 1&2).

15. With regard to Claim 44, Kodim in view of Siemens AG discloses the circuitry of Claim 22. Kodim further discloses that the switching unit (3) and the primary protection device (1) are integrated into a multilayer ceramic substrate. Kodim, on page 6, lines 15-17; disclose that the protection device (1) can be built into a Transmit/Receive Switch.

16. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Siemens AG as applied to claim 22 above, and further in view of Hitachi LTD (JP 2-162744).

17. With regard to Claim 25, Kodim in view of Siemens AG teaches the circuitry of Claim 22. Siemens AG further discloses that the first element comprises a double diode (6).

Kodim in view of Siemens does not teach the first element comprises a gallium arsenide double diode.

Hitachi Ltd, in Figure 7, teaches a double diode constructed of gallium arsenide used for over-voltage protection.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG with Hitachi Ltd, by constructing the double diodes taught by Siemens AG with gallium arsenide, for the purpose of providing greater protection to the switching unit by increasing the switching speed of the protection circuit.

18. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Siemens AG as applied to claim 22 above, and further in view of Koss (US 5122921).



Art Unit: 2836

19. With regard to Claim 30, Kodim in view of Siemens AG teaches the circuitry of claim 22. Siemens AG further teaches that the second element (4) comprises a gas discharger.

Kodim in view of Siemens AG does not teach that the second element comprises a polymer suppressor.

Koss, in column 2 lines 20-23, teaches that a varistor can be used for surge suppression instead of a gas discharge unit.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG with Koss, by replacing the discharger with a varistor, for the purpose of saving cost and space by using the smaller and cheaper varistor for surge protection.

20. Claims 33, 35 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Siemens AG as applied to claim 22 above, and further in view of Kurchuk et al. (US 6272327).

21. With regard to Claim 33, Kodim in view of Siemens AG teaches the circuitry of Claim 22.

Kodim in view of Siemens AG does not teaches that circuit paths that provide control signals to the switching unit, each of the circuit paths comprising a secondary protection device against electrostatic discharges.

Kurchuk et al., in Figure 2, teaches a high power wireless telephone with over-voltage protection, comprising circuit paths (36 & 38) that provide control signals to the switching unit (24), each of the circuit paths comprising a secondary protection device (44 & 46) against electrostatic discharges (column 3 lines 66 & 67 & column 4 lines 1-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG with Kurchuk et al., by Replacing the diplexer (3) taught by Kodim, with the switching unit taught by Kurchuk, for the purpose of providing a mobile phone with a switching unit that prevents receiver overloading without degrading the receiver sensitivity (Kurchuk et al. Column 2 lines 31-35).

22. With regard to Claim 35, Kodim in view of Siemens AG and further in view of Kurchuk et al. discloses the circuitry of Claim 22. Kurchuk further discloses that the switching units comprises field effect transistors (Q1 & Q2), a contact break distance of each of the field effect transistors connecting the terminal (30) to the signal line (32 & 34), and wherein the circuitry further comprises: circuit paths that connect to gates of the field effect transistors, the circuit paths (40 & 42) for providing control signals to the gates, each of the circuit paths comprising a secondary protection device (44 & 46) for protecting against electrostatic discharges.

23. With regard to Claim 39, Kodim in view of Siemens AG and further in view of Kurchuk et al. discloses the circuitry of Claim 35. Kurchuk further discloses that at least one secondary protection device (44) is connected to the reference potential.

24. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Siemens AG as applied to claim 22 above, and further in view of Toshiba (JP 02000134945).

25. With regard to Claim 34, Kodim in view of Siemens AG teaches the circuitry of Claim 22.

Kodim in view of Siemens AG does not teach that the circuitry further comprises a circuit path for supplying for an operating voltage to the switching unit, the circuit path comprising a secondary protection device for protecting against electrostatic discharges.

Toshiba, in Figure 1, teaches a surge protection circuit for a switching unit (4) the circuit path supplies an operating voltage to the switching unit and the path comprises a protection device (6) for protecting against electrostatic discharges.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG with Toshiba, by protecting power terminal of the switching network taught by Kodim, with the protection device taught by Toshiba for the purpose of bypassing surge currents and voltages in the event of a line fault.

Art Unit: 2836

26. Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view of Siemens AG and further in view of Kurchuk as applied to claim 33 above, and further in view of Ikeda et al. (US 5276422).

27. With regard to Claims 36-38, Kodim in view of Siemens AG and further in view of Kurchuk teaches the circuitry of claim 36. Kurchuk et al. further teaches that a low pass filter comprising a capacitor and a resistor can be used to absorb transient surge voltages.

Kodim in view of Siemens AG and further in view of Kurchuk et al. does not teach that the voltage limiting element comprises a varistor or a zener diode having a switching voltage that is less than 100 V.

Ikeda, teaches a device to protect a load. The device contains an element (14) that absorbs surge voltages. Ikeda further teaches that the element (14) can be a CR filter, a varistor or a zener diode (column 3 lines 66-68 & column 4 lines 1-6). Ikeda also discloses that as an example, the element can discharge at 300V (column 5 lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG and further in view of Kurchuk et al. with Ikeda, by replacing the CR filter taught by Kurchuk et al. with the varistor or zener diode taught by Ikeda, for the purpose of providing a voltage limiting element with a fast reaction time that increases the switching speed of the switching unit.

Further, Kodim in view of Siemens AG and further in view of Kurchuk and Ikeda discloses the claimed invention of Claim 36 except that a discharge voltage of 300 V is specified, instead of 100 V. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set a discharge voltage of 100 V, since it has been held that discovering an optimal value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

28. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kodim in view Siemens AG as applied to claim 22 above, and further in view of Trikha et al.

29. With regard to Claim 40, Kodim in view of Siemens AG discloses the circuitry of Claim 22.

Kodim in view of Siemens AG does not teach that the switching unit comprises PIN diodes.

Trikha, in Figure 3A, teaches a diplexer for a cellular phone wherein the switching element comprises pin diodes (116', 118', 120', & 122').

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kodim in view of Siemens AG with Trikha, by replacing the switching unit taught by Kodim with the diplexer taught by Trikha, for the purpose of using the device in high frequency applications.

**Conclusion**

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bauer whose telephone number is 571-272-5986. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAB



PHUONG T. VU  
PRIMARY EXAMINER